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By-Gerlach, Vernon S., And Others
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Analysis of a film script that makes the learner identify and distinguish between statements of observation and statements of inference leads an instructor (or other program writer) step by step through the processes of preparing an instructional specification--a blue-print for preparing powerful self-instructional materials. There are four parts to an instructional specification. the terminal behavior, the behavior that the self-instructional material should develop in the learner; the instructional cue, a stimulus (word, sentence, pictures) that spurs the learner on to a specific terminal behavior; the elicitor, a statement or question that elicits from the learner either a terminal behavior or a response or responses which he must make before the instructional cue will mediate the terminal behavior; and last, a specification of the Limits of the Stimulus class that controls the desired responses. By means of self-correcting questions and answers and problems, the instructor's constant and active participation is secured so that by the end of the monogram, he has learnt the component parts and rationale of an instructional specification and, indeed, should be able to formulate one himself. The script is appended. (GO)

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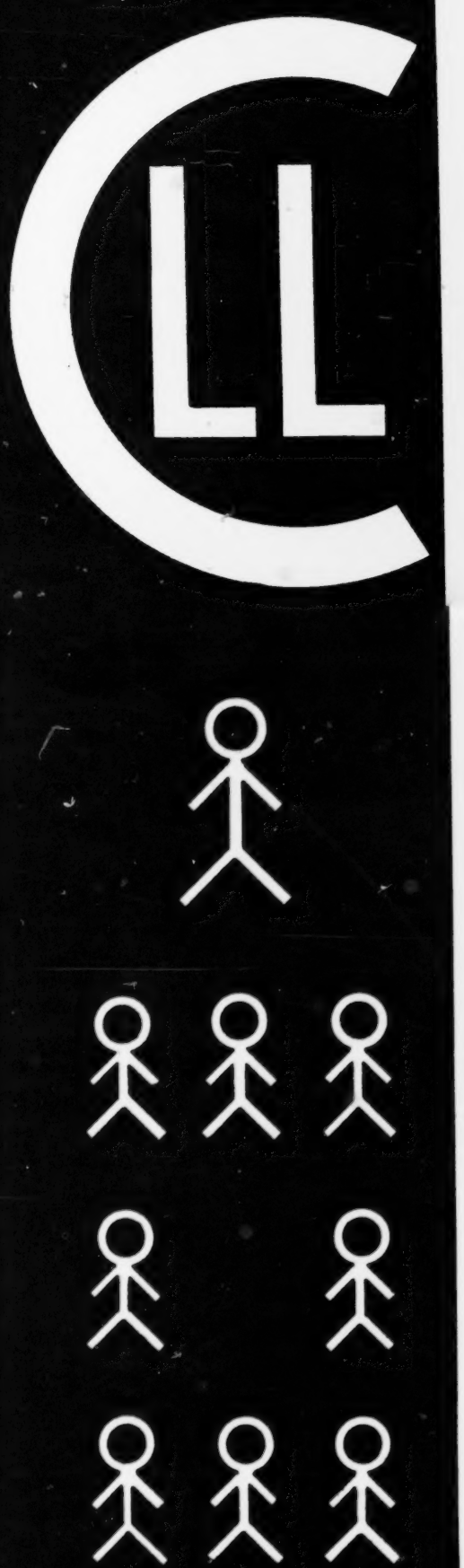

DEVELOPING THE INSTRUCTIONAL SPECIFICATION

MONOGRAPH #12

VERNON S. GERLACH
HOWARD J. SULLIVAN
ROBERT J. BERGER
ROBERT L. BAKER
RICHARD E. SCHUTZ

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Educational Technology
Arizona State University
Tempe, Arizona

CLASSROOM LEARNING LABORATORY

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

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Vernon S. Gerlach

Howard J. Sullivan

Robert J. Berger

Robert L. Baker

Richard E. Schutz

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From time to time references are made to films. When the text tells you to look at a film, you may either do that or look at the script for the film on the yellow pages at the end of this monograph.

Developing the Instructional Specification

The Terminal Behavior

The Terminal Behavior

The Instructional Specification, which we'll call an IS, is a blue-print for preparing powerful instructional materials. It contains four parts, each of which will be defined and explained as you come to it.

The first part is something with which you're already somewhat familiar. You know how to select a task and how to state the task in appropriate performance terms. Because of this, it should be quite easy for you to state the terminal behavior.

The terminal behavior is the behavior that the self-instructional film should develop in the learner. To begin with you'll look at Film #3. Do so now.

Can you tell what is the terminal behavior of this film? Write it here. Use one of the performance terms from Section (identify, name, describe, order, construct). Don't forget to include an object for your verb.

_____

_____

Now turn to the next page.

****

The film which you just viewed was prepared to enable the learner to identify statements of observation and statements of inference in a science context. In the next paragraph you'll find several blanks. Fill in all of them; then turn the page to see whether you were correct.

Notice that the statement underlined above meets the requirements established earlier. In the first place, it describes something that the _____ does. Secondly, it uses a term to describe this performance that any competent individual can _____. Thirdly, it specifies a _____ context within which the performance or behavior is to occur. (Now compare your answers with those at the top of page 4).

Exactly what does the statement of terminal behavior do? It tells you what the learner will be doing when he reaches the end of the self-instructional film. He will "identify statements of observation and statements of inference". It also tells you under what conditions he will perform this act of "identifying". He will "identify . . . statements . . ., given objects and/or events and/or characteristics to which the statements refer".

Let's see just what this statement means in terms of what a learner does. In the last film you saw the picture of a man walking away from a door of a building. The man was carrying a bag which was apparently full of unidentified items. You were asked to decide whether the statement "The man is leaving the building" is a statement of observation or inference.

Put the elements together. You have the following:

(1) An event -- A picture of a man leaving a building.
(2) A statement about the event -- "The man is leaving the building."
(3) A question -- "Is this a statement of observation or a statement of inference?"

Now the learner makes an observable response. He may speak the answer, he may write it, he may point to it, or he may do any of a number of other things to indicate whether he thinks the correct response is "Observation" or "Inference". No matter how he does it, the point is that when he does it correctly, he is

> "identifying statements of observation and statements of inference in a science context, given objects and/or events and/or characteristics to which the statements refer."

Answers to the questions on p. 2 .

pupil or learner

observe or see

subject (matter)

On the next page you will find several "frames" of a linear program. Before you turn the page, provide yourself with a sheet of paper about the size of this page. Cover the page with this sheet of paper, and slide it slowly down the page until a row of asterisks is revealed. Then respond to the question. After you have done so, slide the mask to the next row of asterisks to find the answer. First try the "frames" on this page as an example.

You slide the mask down the page until you see a row of _____.

* * * * * * * * * * * * *

asterisks

* * * * * * * * * * * * *

When you reach the first row of asterisks, stop and make your _____.

* * * * * * * * * * * * *

response

* * * * * * * * * * * * *

Then check your response by sliding the mask to the next row of asterisks.

Now turn to the next page and follow this procedure until you're told to stop.

The acrostic IS stands for I_____ S_____.

* * * * * * * * * * * * * * * *

Instructional Specification

* * * * * * * * * * * * * * * *

The first component of an IS is a statement of the learner's terminal _____.

* * * * * * * * * * * * * * * *

behavior

* * * * * * * * * * * * * * * *

In the example which you studied, the terminal behavior was described by the verb "_____".

* * * * * * * * * * * * * * * *

identify

* * * * * * * * * * * * * * * *

When you prepare an IS, your first step is to define the _____ _____.

* * * * * * * * * * * * * * * *

terminal behavior

* * * * * * * * * * * * * * * *

Now turn to the next page.

You looked at a portion of film designed to teach a learner to identify both statements of observation and statements of inference. This means that when the learner is given a pictured event and a number of statements about that event, he must tell which are statements of observation and which are statements of inference. In order to do this, the learner must first master several prerequisite behaviors. These prerequisite behaviors are called en route behaviors. In the example above, the learner could not perform the task unless he had previously learned to identify statements of observation. In similar fashion, the learner would have had to learn in advance how to identify statements of inference. Obviously, the learner cannot tell which statements are statements of observation and which are statements of inference until he has learned to identify examples of each. Consequently, the portion of film which you viewed assumes that the learner possesses two en route behaviors. They are:

(1) to identify statements of observation in a science context, given....
(2) to identify statements of inference in a science context, given....

Thus the complete film "Observation and Inference" requires three IS's, one in which the learner is to identify both types of statements, one for statements of observation alone, and one for statements of inference alone.

Let's review this concept. You state an objective for a film in operational terms. This statement tells what behavior the film is designed to develop in the learner. It is the first part of an IS.

The first part of an IS is the statement of _____ _____.

* * * * * * * * * * * * * * * *

terminal behavior

* * * * * * * * * * * * * * * *

Sometimes, before you develop the IS for this terminal behavior, you must specify one or more _____ _____.

* * * * * * * * * * * * * * * *

en route behaviors

* * * * * * * * * * * * * * * *

You will always have as many IS's as you have statements of _____ _____ and _____ _____.

* * * * * * * * * * * * * * * *

terminal behavior
en route behavior

* * * * * * * * * * * * * * * *

Let's begin with the first en route behavior: To identify statements of observation in a science context given objects and/or events and/or characteristics to which the statements refer. This means that the learner must respond correctly (either by writing or underlining the correct responses or by pointing, touching, speaking, etc.) to questions such as "Is this a statement of observation?" and "Which is a statement of observation?" To put it in more precise terms, the learner must make correct discriminations (and these discriminations must be observable!) of both exemplars and non-exemplars of statements of observation.

One more thing to note! The first component of an IS is called a terminal behavior. This is so whether the behavior was initially called a terminal behavior or an en route behavior. So the first en route behavior (underlined above) would be called the "terminal behavior" for the first IS.

Now review. What is the name of the first component of an IS?

* * * * * * * * * * * * * * *

Terminal Behavior

* * * * * * * * * * * * * * *

How will you state the Terminal Behavior of the first IS?

* * * * * * * * * * * * * * *

To identify statements of observation, given objects and/or events and/or characteristics to which the statements refer.

* * * * * * * * * * * * * * *

B. The Instructional Cue

The second part of an IS is called the instructional cue. The instructional cue is, in the language of the psychologist, a stimulus. It is a stimulus which helps cause the learner to engage in the specified terminal behavior. It may be a word, or a sentence, or a series of pictures, or an oral statement. It could be any of a vast number of stimuli. We are going to limit ourselves to one type of instructional cue---a verbal statement.

Take an example from the field of arithmetic. We want the learner to identify proper fractions. One way of doing this would be to present him with all the possible fractions (proper and improper) in the universe, or a defined sample of all these fractions, and have him respond in the presence of each example to the question, "Is this a proper fraction?"

$\frac{1}{2}$ Is this a proper fraction?

$\frac{2}{1}$ Is this a proper fraction?

etc.

If we told the learner whether or not each response was correct immediately after he made it, he would, if he were a bright pupil, soon start saying to himself, "If the top number is smaller than the bottom number, the fraction is proper." In no time at all he would be able to respond correctly to the question, given any possible fraction.

Why is he able to respond correctly? Certainly not because he has memorized all the proper fractions and paired them with the appropriate label! On the contrary, he has developed (we assume) a verbal statement (which we can't observe) to mediate his response. Any pupil who can, when he sees a fraction, say to himself "if the top number is smaller, the fraction is proper" will probably

identify proper fractions with complete accuracy.

If we had told him, before he started responding, to look at the top number to see whether it is smaller, we would have been providing an instructional cue. This is the second component of the IS. Here is the definition of an instructional cue:

> A stimulus, or stimuli, which a learner can use to mediate the desired terminal behavior.

Let's review:

The second component of an IS is called the _____ _____.

* * * * * * * * * *

instructional cue

* * * * * * * * * *

The instructional cue is a statement which mediates the desired _____ _____.

* * * * * * * * * *

terminal behavior

* * * * * * * * * *

In the example given, the instructional cue enabled the learner to _____ examples of proper fractions.

* * * * * * * * * *

identify

* * * * * * * * * *

Now you are going to look at Film #1. As you look at it, remember that its purpose is to enable a learner to "identify statemtns of observation...." Your

task is to tell what the instructional cue is. Now look at the film.

What is the instructional cue?

* * * * * * * * * * *

A statement of observation tells what you see. (Any sentence of equivalent meaning would be a satisfactory answer.)

* * * * * * * * * * *

This statement is used to mediate the correct response, i.e., to enable the learner to identify correctly statements of observation. The information presented in this cue enables him to do just that. The statement, therefore, is an instructional cue because it mediates the response called for in the terminal behavior.

Now let's consider the next IS. The terminal behavior is "to identify statements of inference, etc." You are going to provide the learner with pictures of events and statements about the events. You want him to identify those statements which are inferences. Try to write the instructional cue for this IS.

* * * * * * * * * * *

A statement of inference tells what you guess but cannot see. (Or a sentence of equivalent meaning.)

* * * * * * * * * * *

This statement serves as an instructional cue because it is able to

the terminal behavior.

* * * * * * * * * * *

mediate

* * * * * * * * * * *

Given the instructiona cue together with a picture and a statement of inference about an object or event or characteristic in the picture, the learner can make the desired _____.

* * * * * * * * * * *

response

* * * * * * * * * * *

The desired response in this example is to _____

_____.

* * * * * * * * * * *

identify statements of inference in a science context, given objects and/or events and/or characteristics to which the statements refer.

* * * * * * * * * * *

Now notice how the instructional cue appears in a portion of the film. Below are brief descriptions of 3 scenes. After looking at the film, tell in which scene the instructional cue first appears.

Look at Film #2

Check the sequence in which the instructional cue first appears:

1. girl with book
2. thermometer
3. smoke from box

* * * * * * * * * * *

3. Smoke from box.

* * * * * * * * * * *

Quite near the end of the sequence the instructional cue appeared for the first time in its entirety. Two characteristics of the instructional cue should be clear by now. The first is that the instructional cue must possess sufficient power to mediate the response of interest. If the learner (given the cue for inferences, the pictures, and the statements) were not able to identify the statements of inference, it would be quite certain that this particular cue would need refining. Secondly, the instructional cue should be free of all stimuli which are not needed. It should present the learner with only that information which is required to mediate the response of interest. There should be no irrelevancies.

Example: A teacher is preparing an IS for a lesson in cross-cancellation of fractions. The pupils know how to reduce fractions to lowest terms. The teacher uses the following instructional cue:

When a numerator and a denominator have a common divisor, reduce them to lowest terms.

The first problem is

$$\frac{1}{4} \times \frac{2}{3}.$$

Every pupil misses it. Why? Simply because the instructional cue lacks sufficient power to mediate the response of interest--namely, to cross-cancel. But this is merely a round-about way of saying the pupils aren't "getting it." What can be done with the instructional cue to make it function? Probably the difficulty stems from the fact that the learner has previously reduced fractions only when the two numbers were terms of the same fraction. Perhaps the conept of reducing the numerator of one fraction and the denominator of another has never occurred to them. While it is possible that the source of the difficulty

may lie elsewhere, the best bet would be to try to improve the instructional cue. Perhaps if the instructional cue were worded as follows, it would function properly:

> When a numerator of one fraction and a denominator of another fraction have a common divisor, reduce them to lowest terms.

Probably the learner will no longer be inhibited by the system which he learned earlier, namely, reducing only when the two numbers to be divided were terms of the same fraction.

Unless a task is very simple, the first attempts at writing an instructional cue may be somewhat disheartening. Frequently the cue will need revising and re-revising. This is par for the course. A good instructional cue is a finely-honed tool which generally comes into being only as a result of a rather substantial investment in time and effort. If it is a good cue, it is only because it has stood the test of actual use.

An IS may require more than one instructional cue, depending on the entering behavior (or readiness) of the learner and the complexity of the instructional objective. Recall the film on identifying statements of observation. If a learner couldn't identify what he sees, the instructional cue would not function. He must be able to identify an apple when he sees one, a car, a book, etc. If he were unable to identify what he sees, another instructional cue would be required. Then, after he is able "to identify what he sees," it would be feasible to present the instructional cue "A statement of observation tells what you see."

Consider an IS which requires more than one instructional cue. The objective is "to apply the rule for using commas to separate parts of a date." Before doing this, the learner would need "to state that days of a week may be part of date." Whenever a sub-objective is defined (as in the present example) another

IS must be developed. Our problem is to lead the learner to punctuate correctly an expression such as

on Sunday, July 31

but refrain from placing a comma in an expression such as

on a rainy Sunday in July.

To do this, he must first (as the sub-objective states) state that days of a week are part of a date. The instructional cues which mediate this performance are

(1) The name of a day of the week is one part of a date.

(2) The kind of a day is not part of a date.

As we shall see later (in the Stimulus Limits section), the examples which are presented the learner will be confined to

(1) the seven days of the week and

(2) compound words and adjective phrases which include one of the seven days of the week.

As long as the examples are confined to these limits, the instructional cues above will be sufficient to mediate the desired responses.

The simplest way to review what you should know about instructional cues would be to try to write one. In the two films which you viewed, the objectives were

(1) to identify statements of observation in a science context, given objects and/or events and/or characteristics to which the statements refer, and

(2) to identify statements of inference in a science context, given objects and/or events and/or characteristics to which the statements refer.

The instructional cues were, respecitvely,

(1) A statement of observation tells what you see.

(2) A statemtn of inference tells what you guess, but cannot see.

The third IS in the sequence "Observation and Inference" is designed to cause the learner "to distinguish between statements of observation and inference in a science context, given objects and/or events and/or characteristics to which the statements refer.

Note! To distinguish means both statments of observation and statements of inference will be given the learner and he must identify each of the two types of statements. When a learner is identifying two or more classes within the same task, we may also describe the behavior as "distinguishing between" each of those classes.

Now you try to write the instructional cue(s) for this IS. Remember that an instructional cue is a statement which the learner can use to mediate the correct response.

First, how many instructional cues will you need? (one - two - three or more)

* * * * * * * * * * *

Two

* * * * * * * * * * *

Why will you need two instructional cues?

* * * * * * * * * * *

You'll need one cue for each class which the learner is to identify. In this IS he is to distinguish between statements of observation and statements of inference. You'll need no less than two cues.

If the learner is to distinguish between proper fractions, improper frac-

tions, and mixed numbers, you'd need a minimum of three instructional cues.

* * * * * * * * * * *

Write the instructional cues for the objective "to distinguish between statements of observation and statements of inference..."

* * * * * * * * * * *

(1) A statement of observation tells what you see.

(2) A statement of inference tells what you guess, but cannot see.

* * * * * * * * * * *

Obviously, the instructional cues are the same as those which you saw in the first two IS's. The reason for this fact is quite simple. The learner must be able to identify each type of statement before he can distinguish between them. Consequently, if he is supposed to learn to distinguish between two things which he can identify, the two instructional cues used in the IS's for identifying will also be the cues in the IS for distinguishing. For example, if a learner is to distinguish between jazz, rock-and-roll, and country western music, he will first have to learn to identify jazz, to identify rock-and roll, and to identify country western music. Thus, the three instructional cues used to teach the learner to identify each type of music will also be the cues in the IS for distinguishing between the three types.

The Elicitors

Thus far you have studied the first two parts of three different IS's. They are summarized below:

IS #1 Terminal Behavior: To identify statements of observation in a science context, given objects and/or events and/or characteristics to which the statements refer.

Instructional Cue: A statement of observation tells what you see.

IS #2 Terminal Behavior: To identify statements of inference in a science context, given objects and/or events and/or characteristics to which the statements refer.

Instructional Cue: A statement of reference tells what you guess, but cannot see.

IS #3 Terminal Behavior: To distinguish between statements of observation and statements of inference in a science context, given objects and/or events and/or characteristics to which the statements refer.

Instructional Cue: As given in the preceding two Instructional Specifications.

Consider the first IS again. You have an objective, stated in terms of a desired terminal behavior. You have an instructional cue designed to mediate this terminal behavior. Now suppose you showed a learner a picture of a red apple on the screen, together with the statement "The apple is red." Nothing would happen! There is nothing in this situation which will elicit a response from the learner. The third part of an IS is designed to do just that. It is called an elicitor. This is the definition of an elicitor:

An elicitor is a statement or a question which elicits from the learner either -

(a) the terminal behavior, or
(b) a response or responses which the learner must make before the instructional cue will mediate the terminal behavior.

To begin with, consider the example of the picture of the red apple and the statement "The apple is red." The objective of the first IS will not be attained until the learner gives evidence of the fact that he can identify this statement as an exemplar of a statement describing what he can see. So what will you do to obtain this evidence? You will force a response. You ask the question (in this instance you ask it in writing), "Is this a statement of observation?" The learner responds, "Yes," which is the correct response. You can accept this as evidence of the fact that he can "identify a statement of observation, in a science context, given...." (Certainly you would want more evidence than this, but that is a matter discussed in the unit on criterion standards, above. The example just presented illustrates the first part of the definition of an elicitor: "an elicitor...elicits...the terminal behavior."

Elicitors are also used to elicit responses that the learner must be able to make before he can use the instructional cue to mediate the terminal behavior. Film 1 did not begin with an elicitor such as, "Is this a statement of observation?" Instead, it begain with something quite simple: a picture of the boy eating, the statement that the apple is red, and the elicitor "Does this tell what you see?" This elicitor does not bring forth the terminal behavior; but it <u>does</u> elicit a response which the learner must make before the instructional cue will mediate the terminal behavior. The first elicitor for IS #1, then, is -

1. (Given a pictorial stimulus of a boy eating a red apple)

   Do you see that...?

The statements needed to complete this question are drawn from the Stimulus Limits part of the IS, which will be discussed in our next unit. In this particular instance, the elicitor would be completed by using statements such as those listed below.

Elicitor - Do you see that...

(1) the apple is red?

(2) the apple is sweet?

(3) the boy is hungry?

(4) the boy is eating the apple?

(5) the boy likes the apple?

The purpose of using the elicitor together with such statements is to ascertain whether or not the learner possesses the prerequisite (or entering) behavior which is necessary if he is to use the instructional cue effectively.

If a pupil could not answer the five questions above correctly, it is extremely unlikely that he could "identify statements of observation..." If he can answer the above questions correctly, there is a high probability that he will be able to "identify statements of observation..."

Supposing he can answer correctly the questions framed by the first elicitor, what would the next step be? The next elicitors should elicit the terminal behavior. In Film #2 these two elicitors were used:

2. (Given a pictorial stimulus of a car moving, an aerial on the right front fender visible)

   Is <u>this</u> a statement of observation?

   (a) The car is moving.

   (b) The car's motor is running.

(c) The car has a radio.

(d) The car has an aerial.

(e) etc.

3. (Given a visual stimulus of a girl laughing at a blue book which she is holding.)

Which is a statement of observation?

(a) The book is funny.
The girl is laughing.

(b) The girl is happy.
The book is in the girl's hands.

(c) etc.

There are three elicitors for the first IS:

1. Do you see that...?

2. Is this a statement of observation?

3. Which is a statement of observation?

The first elicitor of the three requires a lower-order response. Consequently, it is used first in the instructional film. The second and third elicitors require more complex behaviors on the part of the pupil. The responses made to questions built around the first elicitor are prerequisite behaviors for responses to the second and third elicitors. Note carefully the progression from the relatively simple behavior required by the first elicitor to more complex behaviors required by succeeding elicitors. The number of elicitors for any IS is complete only when you have an elicitor which elicits the terminal behavior. Now refer to the definition on page 19 of this unit once again to see whether you can identify the two kinds of responses which elicitors generate. Which part of the definition is related to each of the following

elicitors?

Mark (a) if a terminal behavior

Mark (b) if an en route behavior

a or b? Elicitor 1 - Do you see that.....?

a or b? Elicitor 2 - Is this a statement of observation?

a or b? Elicitor 3 - Which is a statement of observation?

* * * * * * * * * * *

(Answers: You should have marked a (b) in the first blank and (a)'s in the second and third blanks. The learner who can respond correctly to questions derived from either Elicitor 2 or Elicitor 3 is "identifying statements of observation..." and is, therefore, displaying the terminal behavior stated in the first IS.)

* * * * * * * * * * *

Review the terminal behavior and the instructional cue of the second IS (p. 18). If necessary, look at the film again (Film #1). Now try to write the three elicitors for this IS. Remember that one of them will deal with a lower-order response because the learner must have a certain prerequisite behavior before he emits the terminal behavior. The other two will elicit the terminal behavior.

1st Elicitor _____

_____

2nd Elicitor _____

_____

3rd Elicitor _____

_____

(now turn to the next page)

Answers:

1st Elicitor - Do you guess that.....?

(Perhaps you might have included statements such as "...it is a hot day," or "...the thermometer stands between 100° and 110°." Actually, these are a part of the stimulus limits section of the IS, which is the topic you'll be studying in the next unit. If statements such as these are included, you should be very much aware of the fact that they are included merely to make a complete sentence. The elicitor, per se, is comprised of the underlined words only.)

2nd Elicitor - Is this a statement of inference?

3rd Elicitor - Which is a statement of inference?

* * * * * * * * * * *

The elicitor is generic rather than specific. Often several specific elicitors requiring responses at a similar level of complexity may be constructed from the single generic elicitor listed in the IS. Take the second elicitor from the exercise you just completed: "Is this a statement of observation?" Below are four forms of this one elicitor. None of these four is a new elicitor; each is merely a variation of the elicitor as presented above:

2nd Elicitor - Is this a statement of observation?

1st variation - Is "The car is moving" a statement of observation?

(yes --- No)

2nd variation - "The car is moving" (is --- is not) a statement of observation.

3rd variation - "The car is moving" is a statement of observation.

(True-False)

4th variation - Is "The car is moving" a statement of observation?

When writing an IS, only the generic form is included. The variations are used when the instructional film is being prepared. More will be said about this in the unit on "Preparing the Program Outline."

You should be ready to write elicitors now. The exercise below will give you practice in this skill.

The objective, or terminal behavior, is to "identify a dog, given pictures of dogs, cats, lions, bears, tigers, and foxes." Write an elicitor beginning with the word "Is" which will elicit the terminal behavior.

1. Is _____

_____

* * * * * * * * * * *

"Is this a dog?" The elicitor need be no more complicated than this. The framework is "Is this a ...?" and the content is expressed by the word "dog". There is nothing more to an elicitor.

* * * * * * * * * * *

Supposing that you presented the learner with a page of pictures of the animals listed above. What elicitor might you use to elicit identifying responses from the learner?

2. _____

_____

* * * * * * * * * * *

"Mark each picture of a dog." You could, of course, use "underline" or "circle" or any other word which calls forth some kind of overt, observable response which will enable the teacher to determine whether or not the learner is identifying dogs.

* * * * * * * * * * *

Other kinds of elicitors could include the following:

3. Which one is a dog? (Given a picture of a dog and a cat, or given a picture of a dog and any one of the other animals listed above.)
4. Say "yes" if you see a picture of a dog; say "no" if you see a picture of an animal that is not a dog. (In this instance the pictues would be shown the learner one at a time.)

Examine once more the four elicitors just presented for framework words and content words. Analyze elicitors 2, 3, and 4 as shown by number 1 below.

	Framework words	Content
1.	Is this a .....?	dog
2.	_____	_____
	_____	_____
3.	_____	_____
	_____	_____
4.	_____	_____
	_____	_____

* * * * * * * * * * *

	Framework words	Content
2.	Mark each picture of a ...	dog
3.	Which one is a ...	dog
4.	Say "yes" if you see a picture of a ... Say "no" if you see a picture of an animal that is not a ...	dog

* * * * * * * * * * *

Below are nine statements of terminal behavior, together with other information that might be needed to write elicitors. Write one elicitor for each statement. Following each answer space, you will find several elicitors for each terminal behavior. Compare your effort with these. The suggested answers do not cover all possibilities. Probably several of your elicitors will not correspond exactly with the suggested answers. This is permissible as long as it will elicit the precise response specified in the terminal behavior or an en route response which leads to the terminal behavior.

To identify dogs, given pictorial representations of dogs and cats.

Your elicitor: _____

_____

* * * * * * * * * *

Identify:

(1) Is this a picture of a dog?

(2) For each picture, say "dog" or "not dog."

(3) Which is a picture of a dog?

* * * * * * * * * *

To name dogs, cats, lions, bears, tigers, and foxes, given pictorial representations of each.

Your elicitor: _____

_____

_____

* * * * * * * * * *

Name:

(1) This is a _____.

(2) Name this:

(3) What is this?

(4) What is this animal called?

(5) Write the name of each animal.

* * * * * * * * * * *

To order the first five battles of the Civil War. (In this task the learner may be given the names of the battles or he may have to supply them. Before writing your elicitor, decide how you want the terminal behavior stated--with or without the names of the battles.)

Your elicitor: _____

_____

* * * * * * * * * * *

Order:

(1) Arrange these battles in the order in which they were fought, beginning with the earliest.

(2) List the first five battles of the Civil War in the order of their occurrence.

(3) Name the first five battles of the Civil War in order, beginning with the battle which was fought first.

For the first elicitor the learner is given the names of the first five battles, but for the next two he will have to recall or find the names.

* * * * * * * * * * *

By this time you have noted that synonyms for the terminal behavior are frequently used in the elicitors. The elicitors for "order" included "arrange in order," "list in order," and "name in order". As you shall see later, in the Program Outline unit, it is a good idea to use synonyms if you hope to achieve

any transfer of learning beyond the specific examples used in the instructional sequence.

Here is another objective: To describe what will happen when oxygen is added to Solution M.

Your elicitor: _____

_____

* * * * * * * * * * *

Describe:

(1) Describe the results when oxygen is added to Solution M.

(2) Tell what will happen when this gas is added to that solution.

* * * * * * * * * * *

To construct an angle equal to a given angle.

Your elicitor: _____

_____

* * * * * * * * * * *

Construct:

(1) Construct an angle equal to angle D E F.

(2) Draw an angle equal to the angle formed by the intersection of Terrace Road and Apache Boulevard.

(3) Make an angle equal to this one:

(In some instances the specifications of what is to be constructed are stated clearly in the entering behavior or in the instructional materials. Whenever this is not the case, the specifications must be included with the elicitors. For example, in the first elicitor above the specifications state that the angle must be "equal to

angle D E F." Always include the specifications in the elicitor, unless they appear in the entering behavior or instructional materials.)

* * * * * * * * * * *

To name the rule for computing the speed of a freely falling body.

Your elicitor: _____

_____

* * * * * * * * * * *

Name:

(1) What is the rule for determining the speed of a freely falling object?

(2) How is the speed of a freely falling object computed?

* * * * * * * * * * *

To identify the speed of a freely falling object. (Either the learner can state the rule or he is given the rule.)

Your elicitor: _____

_____

* * * * * * * * * * *

There are many possible elicitors for this behavior. Any of the elicitors in this list, among others, would be acceptable.

(1) Is this the speed of a freely falling body 2 seconds after its release?

(2) Match the speeds listed with the falling objects shown in the diagram.

(3) Is the speed of the object shown in the diagram 15 mph?

(4) Select from a table the speed of a freely falling body at each one-second interval during the first five seconds of its fall.

* * * * * * * * * * *

To describe how to compute an angle of reflection.

Your elicitor: _____

_____

* * * * * * * * * * *

Describe:

The number of possible correct answers for this one is extremely great. You could, for example, say something like this:

(1) State the angle of reflection for the ball shown in the diagram and tell how you determine the angle.

Actually, you can use any of a large number of terms if you also add to it the requirement that the learner must tell or write how he determined the angle.

You might want a learner to describe how to compute the speed of a given object which is falling freely. Your elicitor would be

(2) Tell how to compute the speed of this freely falling object.

* * * * * * * * * * *

To compute and name the speed of a freely falling body at specified times after its release.

Your elicitor: (Assume that the learner is able to state the rule "$d = 1/2\ gt^2$".) _____

_____

* * * * * * * * * * *

Once again, you may use any of several elicitors. Here are two examples:

(1) Which of the two objects in the diagram will reach the ground first if Object A is released 2 seconds after Object B?

(2) List in order of highest attained speed each object shown and

its rate of travel at impact.

The first three parts of an IS are (1) the Terminal Behavior, (2) the Instructional Cue, and (3) the Elicitors. Elicitors are statements or questions which elicit from the learner the terminal behavior, or a response which serves to mediate the terminal behavior.

The Stimulus Limits

The final section of an IS specifies the limits of the stimulus class that controls the desired responses. Before you begin writing the Program Outline for a film, it will be necessary for you to decide what kinds of stimuli you are going to include in your film. No matter what the topic or subject matter, you will have <u>two</u> kinds of stimuli.

Consider the task of learning to name the proper response to a traffic light. This is a schoolroom situation in which a simulated traffic semaphore employing green, red, and yellow lights is used. The learner is to respond by saying "go" in the presence of a green light and "stop" in the presence of red or yellow lights. The desired terminal behavior, then, is "to name the correct response to the three traffic lights: green, red, and yellow." The first IS would look like this:

Terminal Behavior: To say "go" in the presnece of the appropriate traffic light.

Instructional Cue: Say "go" when you see a green traffic light.

Elicitors: Is this a "go" light?
What kind of light is this?

Obviously, the learner is to say "go" under certain conditions, but not under other conditions. Suppose that you present a green traffic light to him: he should say "go". You do not want any other stimulus condition to control this response. Consequently, your stimulus limits should be very simply stated: "a green traffic light."

But there is more to it. If you presented only green traffic lights to him, you could never be certain that he is responding to a <u>green</u> traffic light. Maybe he would say "go" in the presence of any kind of traffic light, regardless

of its color. So you show him a red traffic light from time to time. The proof of the learning will lie in the learners' refraining from saying "go" in the presence of a red traffic light.

There are, then, <u>two</u> classes of stimuli. The first class controls the desired response (i.e., the terminal behavior). In our present example this is the green traffic light. Any such discriminative stimulus is called an S^D (pronounced "ess-dee"). An S^D is a general class of discriminative stimuli that are to control that response which is the terminal behavior. (The S^D may also control any number of en route responses which lead to the terminal behavior, but that will be discussed in detail in the Program Outline unit.)

The other class of stimuli consists of the improper stimuli for the terminal behavior. If you want the learner to say "go" in the presence of the proper traffic light, then a red traffic light is an improper stimulus for that response. Any discriminative stimulus which is an improper stimulus for the specified response is called an S^Δ (pronounced "ess-delta"). This is the definition: An S^Δ is an improper stimulus for the response serving as the terminal behavior, but it does possess the potential for controlling this response.

Let's examine this more closely. What kind of stimulus might elicit (improperly) the response "go" from the learner? We've already mentioned a red traffic light. Certainly the yellow traffic light should be included, because you want to be certain that he doesn't say "go" when he sees a yellow light. Imagine that there is a neon advertising sign near the traffic light. It uses alternating green and red lights to attract potential customers' attention. Is there any possibility that this green light might elicit the "go" response from the learner? If you think so, you should include the green

advertising sign in your stimulus limits.

Now try a few questions to see if you have the idea. What kind of discriminative stimulus would the green advertising sign be in the IS which we've been discussing--S^D or S^Δ?

* * * * * * * * * * *

It would be an S^Δ.

* * * * * * * * * * *

Why would it be an S^Δ and not an S^D?

* * * * * * * * * * *

It would be an S^Δ because it is an <u>improper</u> stimulus for the response "go". Only proper stimuli for the specified response are called S^D's.

* * * * * * * * * * *

How many S^D's are there for the terminal behavior of the IS we've been discussing? _____

* * * * * * * * * * *

Only one: the green traffic light.

* * * * * * * * * * *

Why is there only one S^D for this response? _____

_____

* * * * * * * * * * *

The <u>only</u> stimulus that should control the response "go" is a green traffic light. Any other might well be disastrous.

* * * * * * * * * * *

There is one S^D. That decision is simple and straightforward. How many

S^{Δ}'s should there be? This depends on the writer of the program. It should be remembered that there is no point in using an S^{Δ} which has a low probability of controlling the response serving as the terminal behavior. If you present to the learner stimuli such as those in the list below, it is unlikely that he will respond "go":

the light in the kitchen ceiling

a green blouse

a picture of the moon

a green crayon

While these stimuli are potential S^{Δ}'s for the response "go", you would not include them in the Stimulus Limits because the probability of the response "go" occurring upon their presentation is too low. You would include a red traffic light, a yellow traffic light, and perhaps the alternating red and green neon advertising sign located close to the traffic light. These would be sufficient S^{Δ}'s for the task specified. This section of the IS would appear in this form:

Stimulus Limits

S^{D}	S^{Δ}
A green traffic light	A red traffic light
	A yellow traffic light
	An alternating green and red neon sign located behind a traffic semaphore.

Now try to complete the Stimulus Limits Section for the following IS.

Terminal Behavior: To say "stop" in the presence of the appropriate traffic light.

Instructional Cue: Say "stop" when you see a yellow or a red traffic light.

Elicitors: Is this a light that tells you to stop?
What kind of light is this?

Stimulus Limits:

S^P	S^Δ
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

* * * * * * * * * * *

S	S
a red traffic light	a green traffic light
a yellow traffic light	(As you discovered above, the number of S^Δ's which will be included is usually a subjective matter. If you feel that a learner might say "stop" in the presence of any of the S^Δ's you have listed, you are undoubtedly correct in your decision to include them in the Stimulus Limits.

* * * * * * * * * * *

Now consider the first "Observation and Inference" IS again:

Terminal Behavior: To identify statements of observation in a science context, given objects and/or events and/or characteristics to which the statements refer.

Instructional Cue: A statement of observation tells what you see.

Elicitors: 1. Do you see that...

(a) the apple is red, (b) the apple is sweet, (c) the boy is hungry, (d) the boy is eating the apple, (ē) the boy likes the apple, etc.

(Given a pictorial stimulus of a boy eating a red apple.)

2. Is this a statement of observation? (a) The car is moving. (b) The car's motor is running. (c) the car has a radio. (d) the car has an aerial. etc.

(Pictorial stimulus of a rapidly moving car with an aerial)

3. Which is a statement of observation? (a) The book is funny. The girl is laughing. (b) The girl is happy. The book is in the girl's hands. etc.

(Pictorial stimulus of girl laughing at a blue book which she is holding)

For this IS, the learner is to identify as a statement of observation any statement that tells what he sees. Therefore, the S^D's, or class of stimuli which the learner should identify as statements of observation, are "any and all statements that describe something that is visible to the observer." Any given stimulus that is a member of this class, such as the statement "The girl is laughing" from elicitor 3 above, is an example of an S^D, and, as such, it should elicit from the learner a response that identifies it as a statement of observation. However, the Stimulus Limits section of this IS includes only the general class(es) of stimuli (as contrasted with the specific examples from elicitor 3) that are to control the desired response.

Certain stimuli have characteristics similar to statements of observation even though they are not. This is especially true of statements which refer to something that the learner cannot actually see but which is so commonly inferred from what he can see that he "takes it for granted." Look at

elicitor 2, "The car has a radio." This is not a statement of observation because one cannot directly observe that the car has a radio. However, the learner has so frequently associated the presence of an aerial with the presence of a radio that he may nevertheless identify this statement and similar ones as statements of observation. To make correct identifications, the learner must identify any statement which tells something he infers (but cannot actually see) as a nonexemplar of the stimulus class "statement of observation." To use the term which you learned above, you would say that a statement of this type would be an S^{Δ} for the response "statement of observation." The S^{Δ}'s for IS #1, then, are "all statements describing something not directly visible to the observer but readily inferred from visible objects or events."

As in the case of the traffic light IS's, the selection of S^{Δ}'s to be included in the observation and inference IS is a subjective matter. For the present IS, one could have selected as S^{Δ}'s "all statements describing something not directly visible to the observer" (whether or not it is readily inferred). Members of this stimulus class would include not only such specific examples as "The car has a radio" but also statements such as "The car is going to Chicago" and "The car has plastic seat covers." But such statements are not very likely to be identified by a learner as statements of observation. Therefore the stimulus class specified in the S^{Δ}'s does not include them. Another example of S^{Δ}'s would be the use of questions. Probably no learner would identify an interrogative sentence as a statement of observation, so there is no apparent advantage to including them. Remember that an S^{Δ} should always be a stimulus which could be confused with an S^{D}; an S^{Δ} must possess the potential of controlling (wrongly) the desired response.

The first IS is now complete. The components, below, will be used to develop the first section of the Program Outline.

Terminal Behavior: To identify statements of observation in a science context, given objects and/or events and/o- characteristics to which the statements refer.

Instructional Cue: A statement of observation tells what you see.

Elicitors:

1. Do you see that... (a) the apple is red, (b) the apple is sweet, (c) the boy is hungry, (d) the boy is eating the apple, (e) the boy likes the apple, etc.

   (Given a pictorial stimulus of a boy eating a red apple)

2. Is this a statement of observation? (a) The car is moving. (b) The car's motor is running. (c) The car has a radio. (d) The car has an aerial. etc.

3. Which is a statement of observation? (a) The book is funny. The girl is laughing (b) The girl is happy. The book is in the girl's hands. etc.

   (Pictorial stimulus of girl laughing at a blue book which she is holding.)

Stimulus Limits:

S^D	S^Δ
All statements that describe something visible to the observer.	All statements describing something not directly visible to the observer, but readily inferred from visible objects or events.

You should be able to complete IS #2 and IS #3 now. Fill in the Stimulus Limits section, below, and compare your answers with those of the text:

Terminal Behavior: To identify statements of inference in a science context, given objects and/or events and/or

characteristics to which the statements refer.

Instructional Cue: A statement or inference tells what you guess, but cannot see.

Elicitors:

1. Do you guess that... (a) it is a hot day, (b) the thermometer reads between 100° and 110°, (c) there are numbers on the thermometer, (d) it is summertime, etc.

   (Pictorial stimulus: Outside thermometer reading 105°)

2. Is this a statement of inference? (a) The smoke is rising. (b) There is fire inside the box. (c) Some smoke is higher than the box, etc.

   (Pictorial stimulus: Smoke rising from a box)

3. Which is a statement of inference? (a) The man is writing. The man is a teacher. (b) The children are seated. The children can read. etc.

   (Pictorial stimulus: Man in front of school class writing on board.)

Stimulus Limits:

S^D	S^Δ
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

* * * * * * * * * * *

Stimulus Limits:

S^D	S^Δ
All statements describing	All statements describing something

something the observer guesses, but cannot see.

visible to the observer.

Note that the S^D's are all "statements describing something the observer guesses but cannot see." In other words, the learner should identify as a statement of inference any stimulus that falls within this class. The S^Δ's for this IS are "all statements that describe something visible to the observer." The learner must learn to identify these stimuli as non-members of the stimulus class "statements of inference." Specific statements from the S^Δ's enable one to determine whether the learner has acquired this behavior.

* * * * * * * * * *

The final IS for the film "Observation and Inference" is given below. Complete the missing section for this IS in the spaces on the next page.

Terminal Behavior: To distinguish between statements of observation and statements of inference in a science context, given objects and/or events and/or characteristics to which the statements refer.

Instructional Cue: As given in the preceding two Instructional Specifications.

Elicitors: Tell whether each statement is a statement of observation or a statement of inference.
(a) The man bought some groceries.
(b) The man is leaving a grocery store.
(c) The man is walking.
(d) The bag is full of groceries.
(e) The man is carrying a bag.
(f) The man has been shopping.

(Pictorial stimulus: Man leaving a store on foot and carrying a bag with groceries protruding from the top)

_____ _____:

____ ____

Statements of Observation

_____ _____

_____ _____

Statements of Inference

_____ _____

_____ _____

* * * * * * * * * * *

Stimulus Limits:

S^P S^A

Statements of Observation

As stated in IS number 1. As stated in IS number 1.

Statements of Inference

As stated in IS number 2. As stated in IS number 2.

Obviously, the final IS does not require a new statement of limits, just as it did not require new instructional cues.

* * * * * * * * * * *

The completed set of three IS's provides an outline of the stimulus conditions essential for attainment of the film's objective. This set of materials now serves as a blueprint from which the program outline for the film is developed. The writing of the program outline is discussed in a subsequent unit. Before going to that unit, however, you should try to write a complete IS. The next section provides an opportunity for you to try your skill at this task.

Writing an IS

While it is important for you to be able to identify and name the various components of an IS (as you have been doing), the terminal skill which you will need to acquire is "to construct an IS for a self-instructional task, given a description of the task." This is your next exercise. Later you will use this IS to write a program outline, and still later you will use it to produce a film.

Here is your task. The sixth grade science teacher has asked you to produce a film "to teach children about levers." For the sake of brevity, you may confine your efforts to first class levers. Later you may wish to cover the entire subject matter, but that will require several IS's. First of all, you don't know exactly what the science teacher wants. You are not going to have him learn how to state objectives operationally. Instead, you will discuss his goals and purposes with him until you are certain that you can state in operational terms the behavior in which he is interested.

In order to get started, let us assume that the two of you have decided that the first thing you want the learners to do is "to name first-class levers when given a pictorial example." You have also agreed that the learner who will use the film will be able to do the following things before using the film:

(1) Identify a fulcrum and its symbol in a diagram.

(2) Identify a resistance and its symbol in a diagram.

(3) Identify an effort and its symbol in a diagram.

(4) Identify a lever, given a properly labeled diagram.

Now you are to write the complete IS for this task. When you have finished, compare it with the IS on the next page. (Hint: you will probably want to use diagrams as well as words in one or more parts of the IS. Use these symbols:

_____ = lever; /\ = fulcrum; R = resistance; E = effort. A lever might be diagrammed like this: R_____E)

(Just in case you've forgotten your sixth grade science, a first-class lever is one in which the fulcrum is located between the effort and the resistance.)

1: Terminal Behavior: _____

_____

2. _____ _____: _____

_____

_____

_____

3. _____: _____

_____

_____

_____

_____

_____

4. _____ _____:

_____ ____ -

_____ _____

_____ _____

_____ _____

_____ _____

Now turn to the next page to compare your efforts with the one given there.

Obviously, there is some room for individuality in writing an IS for the task assigned. Basically, however, your IS ought to look very much like the one below. If the two differ substantially, you ought ot review pp. to .

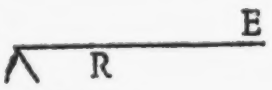
Sample IS for First-Class Lever Assisgnment

1. Terminal Behavior: To name first-class levers when given an example.

2. Instructional Cue: A first-class lever is a lever with the fulcrum located between the effort and resistance.

3. Elicitor: (1) Which is a first-class lever?

(a)

(b) 

(2) Name the kind of lever indicated here:

4. Stimulus Limits:

S^D	S^Δ
All levers with fulcrum between the effort and the resistance (Class I levers).	Levers with fulcrum located at some point other than between the effort and resistance. (Include Class II and Class III levers.)

Script for "Observation and Inference"

Film #1

Pictorial Stimulus	Textual Stimulus	Seconds
1. Red apple	The apple is red. Does this tell what you see? yes no	10
2.	Yes. You see that the apple is red.	5
3. Boy eating a red apple.	The apple is sweet. Does this tell what you see?	9
4.	No. You do not see that the apple is sweet.	4
5. Boy eating a red apple.	The boy is eating his lunch. Does the statement tell what you see?	10
6.	No. The statement does not tell what you see.	5
7. Boy eating a red apple.	The boy has a red apple. Does this tell what you see?	9
8.	Yes. This is a statement of observation. It tells what you see.	4
9. Boy eating a red apple.	The boy is hungry. Does this tell what you see?	8
10.	No. A statement of observation tells something you see, <u>not</u> what you have to guess.	7
11. Boy eating a red apple.	The boy is bigger than the apple. Is this a statement of observation?	9

The pictorial stimuli and textual stimuli from each frame are presented simultaneously in the same film scene. That is, frame 1 represents one scene and the pictorial and textual stimuli from it are presented together in the first scene of the film, etc.

Pictorial Stimulus	Textual Stimulus	Seconds
12.	Yes, it is a statement of observation because it tells what you see.	5
13. Boy eating a red apple.	The boy likes the apple. Is this a statement of observation?	9
14.	No. This is not a statment of observation. It does not tell what you see, but something you have to guess.	6
15. Car moving, no parked or standing cars visible. Aerial on front fender is clearly visible.	The car is moving. Is this a statement of observation?	8
16.	Yes, a statement of observation tells what you see.	4
17. Car moving, no parked or standing cars visible. Aerial on front fender is clearly visible.	The car's motor is running. Is this a statement of observation?	10
18.	No. You cannot see the motor.	4
19. Car moving, no parked or standing cars visible. Aerial on front fender is clearly visible.	The car has an aerial. Is this a statement of observation?	9
20.	Yes. It tells what you see. It is a statement of observation.	6
21. Car moving, no parked or standing cars visible. Aerial on front fender is clearly visible.	The car has a radio. Is this a statement of observation?	10
22.	No.	2
23. Car moving, no parked or standing cars visible. Aerial on front fender is clearly visible.	The car is not out of gas. Is this a statement of observation?	9
24.	No. A statement of observation tells what you see. You cannot see whether the car has gas or not. You can only guess it.	10

Pictorial Stimulus	Textual Stimulus	Seconds
25. Car moving, no parked or standing cars visible. Aerial on front fender is clearly visible.	The car is moving forward. Is this a statment of observation?	9
26.	Yes.	2
27. Girl seated, looking at book which she holds in her hands. She is laughing heartily. She turns a page.	Which is a statment of observation? The book is funny. The girl is laughing.	14
28.	The girl is laughing. A statement of observation always tells what you see.	11
29. Girl seated, looking at book which she holds in her hands. She is laughing heartily. She turns a page.	Which is a statement of observation? The girl is enjoying the book. The girl is turning a page of the book.	15
30.	The girl is turning a page of the book. You can't see whether she's enjoying the book. You can see her turn the page.	8
31. Girl seated, looking at book which she holds in her hands. She is laughing heartily. She turns a page.	The girl is happy. The book is in the girl's hands. Which is a statement of observation?	14
32.	The book is in the girl's hands.	4

End of Film #1

Film #2

	Pictorial Stimulus	Textual Stimulus	Seconds
33.	Thermometer showing 105°. Environment must show clearly that thermometer is outside.	The thermometer shows a temperature of 105°. Do you see this or do you guess it?	14
34.		You see that it is 105°. It is a statement of observation.	5
35.	Thermometer showing 105°. Environment must show clearly that thermometer is outside.	It is summertime. Did you see this or guess it?	8
36.		You guess that it is summertime even though you cannot see what season it is in this picture.	6
37.	Thermometer showing 105°. Environment must show clearly that thermometer is outside.	It is a hot day. Does the statement tell something that you guess, but cannot see?	12
38.		The statement tells something you guess but cannot see. The answer is yes.	5
39.	Thermometer showing 105°. Environment must show clearly that thermometer is outside.	The thermometer shows a temperature between 100° and 110°. Does the statement tell something that you guess but cannot see?	20
40.		No. The statement tells something you see.	4
41.	Smoke rising from box, fire not visible.	There is a fire in the box. Does the statement tell you something you guess but cannot see?	14
42.		Yes. It is a statement of inference. It tells something you guess but cannot see.	6
43.	Smoke rising from box, fire not visible.	Something is burning. Does the statement tell something you guess but cannot see?	13

Pictorial Stimulus	Textual Stimulus	Seconds
44.	This is another statement of inference because it tells something you guess but cannot see. The answer is <u>yes</u>.	9
45. Smoke rising from box, fire not visible.	There is heat in the box. Is this a statement of inference?	9
46.	It's a statement that tells something you guess but cannot see so it <u>is</u> a statement of inference. The answer is yes.	11
47. Smoke rising from box, fire not visible.	Some smoke is higher than the box. Is this a statement of inference?	11
48.	The statement doesn't tell something you guess. It tells something you see so it is <u>not</u> a statement of inference. The answer is <u>no</u>.	11
49. Smoke rising from box, fire not visible.	There is some smoke in the box. Is this a statement of inference?	11
50.	Yes. A statement of inference tells something you guess but cannot see.	6
51. Smoke rising from box, fire not visible.	The smoke is rising. Is this a statement of inference?	9
52.	No. The statement tells what you <u>see</u>.	4
53. Man before class. He is writing on chalkboard. Pupils are clearly visible.	The man is writing. The man is a teacher. Which is a statement of inference?	14
54.	You see that the man is writing, but you guess that he is a teacher. "The man is a teacher" is the statement of inference.	11
55. Man before class. He is writing on chalkboard. Pupils are clearly visible.	The children are seated. The children can read. Which is the statement of inference?	14

Pictorial Stimulus	Textual Stimulus	Seconds
56.	The children can read.	3
57. Man before class. He is writing on chalkboard. Pupils are clearly visible.	The children are in school. The man writies with his right hand. Which is the statement of inference?	16
58.	The children are in school.	7

End of Film #2

Film #3

Pictorial Stimulus	Textual Stimulus	Seconds
59.	In the next scenes, tell whether each statement is a statement of observation or a statement of inference.	8
60. Man walking from grocery store, carrying bag with packages of breakfast cereal protruding from top.	The man is leaving the store. Observation? Inference?	10
61.	Observation. A statement of observation tells something you see.	6
62. Man walking from grocery store, carrying bag with packages of breakfast cereal protruding from top.	The man bought some groceries. Observation? Inference?	10
63.	Inference. A statement of inference tells something you guess, but can't see.	7
64. Man walking from grocery store, carrying bag with packages of breakfast cereal protruding from top.	The man is walking. Observation? Inference?	10
67.	Inference.	2
68. Man walking from grocery store, carrying bag with packages of breakfast cereal protruding from top.	The man is carrying the bag. Observation? Inference?	10
69.	Observation.	2
70. Man walking from grocery store, carrying bag with packages of breakfast cereal protruding from top.	The man has been shopping. Observation? Inference?	10
71.	Inference.	2

End of Film #3